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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,944	09/16/2003	Warren M. Farnworth	2269-5700US (02-1183.00/U)	3861
24247	7590	12/15/2004	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			BREWSTER, WILLIAM M	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,944

Applicant(s)

FARNWORTH, WARREN M.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 26-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>010904; 091603</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The following rejection has been incorporated from the rejection of 9 August 2004, and is reiterated here with the article amendments filed by the applicant on 15 November 2004:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 -11, 14-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Ketia, JP Publication No. 04-024987.

Keita anticipates a method for forming electrically conductive vias through a substrate, comprising: in fig. 3A, forming at least one precursor hole through the substrate 6; introducing unconsolidated dielectric material 10 into the at least one precursor hole; and, in figs. 3B and 3C, selectively consolidating portions of the unconsolidated dielectric material at locations adjacent to a periphery of the at least one precursor hole to form a layer of an insulative coating 11 on surfaces of the at least one precursor hole, in fig. 2, PURPOSE and CONSTITUTION;

limitations from claim 11: wherein the forming comprises forming the at least

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one precursor hole to have one of a substantially cylindrical shape, a substantially frustoconical shape, an hourglass shape, and a bulging center:

bulging as a result of curving, PURPOSE;

limitations from claims 2, 4, 14: wherein the introducing comprises introducing an unconsolidated UV-curable dielectric material 10 into the at least one precursor hole, CONSTITUTION;

limitations from claims 3, 15: in fig. 3B, wherein the selectively consolidating comprises exposing portions of the UV-curable dielectric material to UV radiation in the form of a laser beam: He-Cd laser, CONSTITUTION;

limitations from claim 16: in fig. 3A, wherein the introducing comprises dispensing the unconsolidated dielectric material 10 into the at least one precursor hole 6;

limitations from claims 5, 17: wherein the introducing comprises lowering a level of the substrate relative to a level of a volume of unconsolidated dielectric material: solidification creates a more compact form of the curable material which hence shrinks and lowers the volume of material;

limitations from claims 6, 18: in fig. 3B, wherein the selectively consolidating comprises directing an energy beam, He-Cd laser, onto the portions of the unconsolidated dielectric material, CONSTITUTION;

limitations from claims 7, 19: the method further comprising: repeating the introducing and the selectively consolidating at least once to form another layer of the insulative coating, last sentence of CONSTITUTION;

limitations from claims 8, 9, 20, 21: in fig. 2, the method further comprising:
removing unconsolidated dielectric material remaining within the at least one
precursor hole: to form through hole, PURPOSE; wherein, upon the removing, a
via hole 4 that extends through the insulative coating is exposed;

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12, 13, 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable
over Keita as applied to claims 1-11, 14-21 above, and further in view of Bloemeke et
al., U.S. Publication No. 2004/0112881 A1.

Although Keita's through holes putatively would carry conductive material for
interconnection, but the translated portions do not specify it. Bloemeke does specify
conductors. Bloemeke teaches limitations from claims 12-13; in figs. 1A-3B, wherein
the forming includes drilling through the substrate 26, wherein the forming further
includes trepanning the substrate, ABSTRACT;

limitations from claim 11: wherein the forming comprises forming the at least one
precursor hole to have one of a substantially cylindrical shape, a substantially
frustoconical shape, an hourglass shape, and a bulging center: in fig. 1A, frustoconical
12;

limitations from claims 22-25; the method further comprising: introducing conductive material into the via hole; wherein the introducing conductive material comprises introducing at least one of polysilicon, a metal, a metal alloy, a conductive elastomer, and a conductor-filled elastomer into the via hole: metal; wherein the introducing conductive material comprises at least one of physical vapor depositing, chemical vapor depositing, electrolytic plating, electroless plating, and immersion plating: plating; wherein the introducing conductive material comprises dispensing the conductive material: dispensing the conductive metal for plating, p. 4, ¶ 56. Bloemeke gives motivation in the ABSTRACT. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Bloemeke's process with Keita's invention would have been beneficial because the invention provides for vias with no undercutting.

Response to Arguments

Applicant's arguments filed 15 November 2004 have been fully considered but they are not persuasive. Applicant argues the claimed application differs from the prior art of record because the Keita reference does not, in claim 1, lines 3-4, "introduce a quantity of unconsolidated dielectric material into the at least one aperture". Applicant states on page 10 of the amendment received 15 November 2004, "but, rather, describes that the through hole 3 is formed with unconsolidated photosetting resin 10 already therein."

Examiner respectfully disagrees with applicant's arguments. Examiner notes that both independent claims 1 and 10 are 'comprising' claims. To the examiner's understanding, 'comprising' claims must have all enumerated limitations but does not exclude any additional limitations. Applicant's claims 1 and 10 do not specify how or when the unconsolidated dielectric material is introduced, simply that the material has to be introduced. By the applicant's own admission, the resin exists, or as examiner interprets, has been 'introduced' in the aperture. As the USPTO tasks the examiner to interpret the claims as broadly as reasonably possible, examiner is duty bound to interpret Keita as having introduced the material.

Examiner must give claims their broadest reasonable interpretation, MPEP §2111, "During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified, *In re Pratter*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969), *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)." Also see *In re Zletz*, 13 USPQ 2d. 1320 (Fed. Cir. 1989).

Applicant further attacks the §103 combination rejection of Keita in view of Bloemeke. Examiner stipulates that neither reference teaches all the limitations of applicant's dependent claims, but one would not expect them to. It is the combination of the prior art that teaches all the limitations. As cited above, the motivation is given in Bloemeke's ABSTRACT. It would have been obvious to a person of ordinary skill in the

art at the time the invention was made to recognize that combining Bloemeke's process with Keita's invention would have been beneficial because the invention provides for vias with no undercutting.

As a rule, obviousness is based upon what the "references taken collectively would suggest to those of ordinary skill in the art." *In re Rosselet*, 146 USPQ 183, 186 (CCPA 1965). Furthermore, one cannot show non-obviousness by merely attacking references individually where the rejections are based on combinations of references. *In re Keller*, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 231 USPQ 375 (Fed. Cir. 1986). Instead, there must be an absence of "some teaching, suggestion or incentive supporting the prior art combination that produces the claimed invention." *In re Bond*, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). "Just as piecemeal reconstruction of the prior art by selecting teachings in light of [the] disclosure is contrary to the requirements of 35 USC § 103, so is the failure to consider as a whole the references collectively as well as individually." *In re Passal*, 165 USPQ 720, 723 (CCPA 1970).

For the above reasons, the rejection is deemed proper.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 571-272-1854. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7 December 2004
WB


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